Volume 6, Issue 4 November, 2006

CROP TALK

OMAFRA Field Crop Specialists — Your Crop Info Source

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Brought to You by the Following OMAFRA Crop Specialists

Mike Cowbrough Weed Management Program Lead
Hugh Martin, Organic Crop Production Program Lead
Horst Bohner, Soybean Specialist
Ian McDonald, Applied Research Co-ordinator
Albert Tenuta, Field Crop Pathologist
Keith Reid, Soil Fertility Specialist
Jack Kyle, Grazier Specialist
Brian Hall, Alternative Production Systems Specialist
Peter Johnson, Cereals Specialist
Scott Banks, Emerging Crops Specialist
Gilles Quesnel, Field Crops, IPM Program Lead
Christine Brown, Nutrient Management Program Lead
Adam Hayes, Soil Management Specialist - Field Crops
Greg Stewart, Corn Industry Program Lead
Tracey Baute, Entomology, Field Crops Program Lead

Editor: *Joel Bagg, Forage Specialist*

Compiled by: Marian Desjardine, OMAFRA, London

Time for Post-Season Monitoring of Corn Rootworm

by Gilles Quesnel, Field Crop IPM Specialist, OMAFRA, Kemptville

Corn rootworm damage can shave precious bushels off your corn yields and turn harvest into a nightmare. There is still time to walk through your fields to check for rootworm damage to corn plants.

Corn plants that lodged or appeared "goosenecked" often point to corn rootworm damage earlier in the season. Pull out some of these plants and look for pruned and tunnelled roots to confirmed rootworm damage. Roots from harvested fields can also be pulled and examined. Checking for "goosenecking" and root damage does not provide you with threshold numbers, but will give you the opportunity to assess your fields for potential rootworm damage next year.

Life Cycle

Corn rootworm damage is caused by larvae feeding on and within the roots of the corn plant from mid-June to mid-July. The adults then emerge from the soil in late-July and deposit eggs in the soil until a killing frost occurs in the fall. The eggs overwinter and hatching begins in early June the next year, continuing the cycle.

Cropline 1-888-449-0937

Ontario Ministry of Agriculture, Food & Rural Affairs, Crop Technology Branch

Agricultural Information Contact Centre: 1-877-424-1300
Publication Order Centre: 1-888-466-2372
Northern Ontario Regional Office: 1-800-461-6132
OMAFRA Web Site: http://www.omafra.gov.on.ca//english/crops/index.html

Fields At Risk

Corn fields at risk of corn rootworm damage next year are fields which:

- were in corn this year,
- are a heavy soil type (clay),
- had more than one rootworm beetle per corn plant in late-August, and/or
- had "goosenecked" plants with pruned and tunnelled roots.

Damage In First-Year Corn

Rootworm damage has been observed in first year cornfields in some U.S. States, including parts of Michigan and Ohio. Beginning in the early 1990's, in areas where a strict corn-soybean rotation was followed, an unintentional selection was made for a new variant of western corn rootworm (WCR). The variant population lays at least a portion of its eggs in soybean fields. With the strict corn-soybean rotation, larvae hatching from eggs laid in soybean fields emerge in first year corn fields, where they can cause root injury, lodging, and yield reduction. In affected areas, monitoring procedures have been developed for WCR in soybean fields to determine the need for rootworm insecticide or use of rootworm Bt corn in first-year corn. Monitoring for the variant population usually involves the use of Pherocon® AM yellow sticky traps to determine the presence and density of western corn rootworms adults in soybeans fields during the month of August.

WCR Variant Not Detected Yet In Ontario

Low populations of CRW adults can nearly always be found in soybean fields adjacent to corn fields. However, to date in Ontario, field monitoring has failed to detect CRW variant at economic thresholds. After investigating a few isolated cases of lodging in first year corn fields, Dr. Art Schaafsma, of the University of Guelph, Ridgetown, states that "there is no evidence that the western corn rootworm variant is present at economic levels in Ontario". In the absence of the CRW variant, crop rotation remains our best control strategy for corn rootworm.

Weed Seeds and Manure

by Christine Brown, Nutrient Management Lead, OMAFRA, Woodstock and Mike Cowbrough, Weed Specialist, OMAFRA, Guelph

Do manure applications cause greater weed pressure?

When manure is applied to a field it often results in an increased flush of weeds. The question is often asked whether this results from weed seed coming through the livestock into the manure, or is it a response to the added nutrients. Although the consensus seems to be that weed pressure increases with added fertility, there are a number of simple principles that will help minimize the risk of weed spread from manure to the field.

1. Spread manure on the **same fields** where the feed was harvested to minimize the introduction of new weed species.
2. Where feed is purchased from off-farm sources, scout fields where manure is applied for **"new to the field" weeds**. If discovered, make sure to address these weeds in the herbicide or weed control strategy, especially for prolific and hard to control species.
3. Weed species **with small and hard seed coats** are the most likely to survive livestock digestive systems and manure storages. The most common of these are pigweed, smartweed and velvetleaf. Viable weed seeds are not easy to control because they can remain dormant for a long time. Field conditions such as fertility, temperature and tillage can affect viability and time to germination. Table 1, "Relative Viability of Selected Weed Seeds", shows the approximate number of seeds per plant and seed longevity for some common weeds.
4. Introduction of weed seeds from manure is less significant if the seed bank for those weeds is already high. It is important that **weed control strategies** include weeds that may come from manure application. These strategies could include herbicides, tillage, mowing, crop rotation, or a combination of all.
5. **Composting manure** results in a high temperature environment (50 - 70 °C) that will destroy most weed seeds. From experience though, some seeds such as tomatoes and

Table 1: Relative Viability of Selected Weed Seeds

Common Name	Life Cycle	Seeds per Plant	Relative Seed Longevity (years)
Canada thistle	Perennial	680	3
Green Foxtail	Annual	7,160	3 **
Lambs quarters	Annual	72,450	20+ *
Red root pigweed	Annual	117,400	25-30
Smartweed	Annual	3,140	10-20
Velvetleaf	Annual	~2,000	> 40
Wild buckwheat	Annual	11,900	20+ *
Wild mustard	Annual	13,400	3-5
Wild oats	Annual	250	0-8

Source: Manitoba Agriculture
*Conn et al., 2006. Weed Science, Vol. 54, No. 3, pp 464-470
**Masin et al., 2006. Weed Research, Vol 46, No. 5, pp 362-370.

velvetleaf, will survive the composting process. However, because the composting process often breaks seed dormancy these species will usually germinate at a single time therefore making them easier to manage then if they germinate in multiple flushes.

6. **Observe manure storages** and surrounding areas. Which weeds are growing in the manure pile or liquid storage? The weeds here have proven to be viable in manure and can be transported to the field.

Scouting For Slugs This Fall Will Help Predict Spring Problems

by Tracey Baute, Field Crop Entomologist, OMAFRA, Ridgetown

Scouting for slugs in the fall will help you to determine if they'll be a problem in your fields next spring.

Slug problems mainly occur in no-till fields where heavy crop residue on the soil surface gives slugs a moist sheltered area to live and dodge the drying sun. Cool, wet conditions in the spring and fall also help them to venture out more, without having to worry about dehydrating from drier, sunnier conditions. We tend to see more plant injury in cool wet conditions when the slugs are more active than the crop that is trying to grow. Most of the serious slug injury is experienced in canola, soybeans, wheat underseeded with red clover, and newly seeded alfalfa.

In the fall, adult slugs have one of two goals. For some of them, it is to lay eggs that will overwinter and hatch to become juveniles in the spring. For others, their priority is to get ready to overwinter so that they can come out next spring to lay their eggs. Regardless, they will all be there in the spring ready to feed on your emerging crop. So knowing what the population level is in your fields now will give a good indication of what will be there next spring.

Scouting Methods

Fall scouting for slugs is not that labour intensive. There are two ways of trapping slugs, though some of you may feel that one method is a waste of good beer. The first option is to take small pieces of plywood (approximately 2-3 feet long) or roofing shingles and position them on the soil surface in fields that have been harvested. 10 to 15 boards randomly scattered across the field will provide a good indication of population levels. These boards will act as shelters for the slugs. Visit the boards every 5-7 days for the next month and count how many slugs you see under the

boards. Morning is the best time to look since slugs will still be hanging out in their shelters. Putting flags near the boards will also help you to find the traps again.

The second method is to dig holes the size of a plastic coffee cup randomly in your field. Place a plastic cup in this hole with a few inches of beer in the bottom of the cup. Position the cup so that the lip of the cup is level with or slightly below the soil surface. The beer will attract the slugs and they will drown in it (though they die happy!). Again, place flags next to these traps so that you can find them again. If it rains (which is highly likely this fall) empty these cups and refill them again with beer. Return to these traps every 5-7 days for the next month to determine the number of slugs that have drown themselves in beer.

Action Thresholds
There are no thresholds, but if you are frequently finding slugs at these trap sites, you should consider that field at high risk for slug injury in the spring. Those fields with only a few slugs found are at less risk of having issues in the spring. These fields should again be scouted in the spring just to make sure there is little slug activity.

Managing Potential Problems
Fields indicating a potential problem should be planted early next spring to help get the crop up and growing before slugs become active in late-May. Also, some form of tillage should be considered. Tillage will help the crop emerge more quickly and will also disturb the shelter sites that help these slugs survive. If these methods are not an option, then rotating into another crop in that field may be a wise decision. Although slugs will also feed on corn, it is a good option since the growing point is not affected and therefore it can grow out of the injury. One slug bait product is showing some promise, though it is not registered for field crops and is still very expensive when applied at the rates required.

Given the wet fall that we have had, slugs are living the good life right now, ready and waiting for a crop to feed on. Determining which fields are at high risk of slug problems next spring will help you to stay one step (or should I say slime trail) ahead of them.

Unplanted Treated Wheat Seed: DANG!!

by Peter Johnson, Cereals Specialist, OMAFRA, Stratford

FRUSTRATION! Mother Nature has managed to deep six all our excellent plans for another big wheat crop here in Ontario. Meanwhile, many of us have wheat seed all ready to go in the ground - cleaned, treated, and in the auger wagon. How do we keep that treated seed for next year, and maintain maximum yield potential?

Keep it dry!!
While this statement seems self evident, it is the number one culprit for destroying held-over seed. If you can keep the seed in the wagon, great. If you need to empty the wagon, find totes to put it in. Be sure to put the totes on pallets, as wheat can draw moisture from almost any floor. And be sure to check the seed once a month. It is amazing how often roofs that "don't leak" will have condensation or drips that, over time, will have the seed green and growing.

Keep it separate!
Don't contaminate augers or bins used for commercial grain as you move wheat seed into storage. Pink seed in a wagon load of grain will cause immediate refusal of the grain.

Control rodents!
Wheat seems to attract mice and rats more than any other grain. The back corner of the shed becomes a haven for rodents if an unending source of food is available (a tote of wheat). Bait stations around the storage area are a must.

Control insects!
Wheat also seems to be more attractive to storage insects than most other grains. Treated seed is protected from fungal disease, but not from insect attack. Diatomaceous earth is the simple solution to protect seed. When transferring seed into totes, add diatomaceous earth at an appropriate rate. If seed is left in the seed wagon, spread some diatomaceous earth over the surface of the grain mass.

Cool the grain.
While this may not always be possible, seed maintains viability best when stored in a cool, dry environment. If possible, grain should be cooled to 10 °C or less.

Monitor!
Don't go south for the winter and expect all things to be fine next spring or fall. Mark on your calendar to check that wheat seed every second Monday. And then remind your neighbours when you are down at the coffee shop.

Properly stored, wheat seed can be easily kept from one season to another. Seed from this past harvest was mostly of good quality. If you follow the suggestions above, all you will need to add next fall is a germination test, and your wheat seed should be ready to produce another record wheat yield for the harvest of 2008!

For The Would-Be Winter Wheat Grower - Not All Is Lost!

by Scott Banks, Emerging Crops Specialist, Kemptville OMAFRA

Although this fall's wet weather has prevented many would-be winter wheat growers from planting wheat this fall, not all is lost! For many growers there are several spring cereal options that can still be economical for the cereal-part of your crop rotation.

Cereal Options
Growers have had success with spring wheat, oats and barley. There are many marketing options available for these spring cereal crops. Similar to winter wheat, there are many marketing programs for spring wheat, either through the Ontario Wheat Producers Marketing Board, Palmerston Grain or WG Thompson's. There are also premium price markets for oats for milling and the horse market. The premium barley market is malting and pearled barley. Parrish & Heimbecker offer malt barley contracts. As in the wheat market, there are quality requirements. Talk to your local elevator or check out the Ontario Wheat Producers Marketing Board (www.ontariowheatboard.com) and the Oat and Barley Council of Ontario (www.oatbarley.on.ca) websites about market prices and options.

Plant Early!
Success depends on variety selection, early planting and grower management throughout the growing and harvesting season to produce a quality product. Spring wheat is priced higher than winter wheats, and if seeded early can give comparable returns to winter wheat for many growers. To achieve early planting, many growers have had good success at frost seeding spring wheat and oats. Barley does not respond as well to frost seeding on medium to heavier soils due to wet feet syndrome.

Variety Selection
There are a few new spring wheat varieties with higher yield potential. In area II and IV, varieties like Sable and Hobson look good. In Area III (eastern Ontario) Brookfield and Hobson have done well. Most of the new oat varieties were bred to have high test weight and protein, as well as superior yields. There are specific barley 'malt' varieties. The 2007 "Performance Trials For Spring Cereal Crops" will be available the end of November and can be accessed on the OMAFRA website or 1-877-424-1300. Choosing the right variety is one of the most important management factors that impact on the spring cereal returns.

"Economics of Spring Wheat Versus Barley" Project

by Brian Hall, Edible Bean & Canola Specialist,, OMAFRA, Stratford

In 2006, Ontario farmers planted over 140,000 acres of spring wheat, the largest on record. At $180/t for spring wheat, the economics look very good on paper. However, yield has been the variable that drives profitability. So the discussion at winter meetings the past couple of years is which is more profitable spring wheat or barley?

Soil & Crop Regional Project
In 2006, the Georgian Region Soil & Crop Improvement Association initiated a 3 year project to evaluate the economics of spring wheat and barley. The project involved planting field-length strips of barley and spring wheat and applying the correct inputs for each crop. Nitrogen was applied at 80 lb/ac actual to spring wheat and 40–50 lb/ac to barley. A foliar fungicide was applied to plots if required where it was practical. Yield, moisture, test weight and protein information was collected at harvest. At some sites, a comparison was done for 3 seeding rates for spring wheat – 1.2, 1.6, & 2.0 million seeds/ac. The current recommended seeding rate is 1.2 – 1.6 m seeds/ac. The seeding rate for barley at these locations was 1.0 and 1.4 million seeds/ac.

Assumptions

Table 1 presents the results of the yield and returns for spring wheat and barley at each of the 9 locations. Income was calculated using a crop price of $180/t for spring wheat and $120/t for barley. Costs were based on 2006 OMAFRA crop budgets, but does not include land costs or other overhead costs, such as term loans or depreciation. The returns for straw are not included since no straw yields were collected, even though it is important in determining overall profitability.

Year 1 Preliminary Results

Quality of the spring wheat was good at all locations and all samples achieved the maximum protein premium. The average return over costs was similar for each crop - $66/ac for wheat, and $60/ac for barley. The highest return was $164 / ac from spring wheat that yielded 70 bu/ac at the Arthur 1 site. Spring Wheat produced higher returns than barley at 5 out of 9 sites. At 3 of the sites in which spring wheat preformed poorly, seedbed conditions were not as ideal due to drainage, clay soil type, or spring tilled corn residue. However, emergence was good at all sites.

Spring Wheat Seeding Rate Comparison

The currently recommended seeding rate for spring wheat is 1.4 – 1.6 million seeds/ac. There was a slight trend to higher yield with the 1.6 and 2.0 seeding rate. In previously conducted trials with earlier planting dates, we have not seen a yield increase with higher seeding rates.

Table 2 - Comparison of Spring Wheat Seeding Rates

Location	Yield bu/ac		
	Seeding rate million seeds/ac		
	1.2 m/ac	1.6 m/ac	2 m/ac
Arthur 1	72	73	73
Arthur 2	51	51	51
Grand Valley	57	59	63
Grand Valley 2	35	38	38
Listowel	48	49	53
Elmira	46	52	52
Arthur 3	48	48	51
Arthur 4	64	66	68
Average	53	55	56

Comments

In a year in which the majority of spring grain was planted early, many of the sites were planted late. Spring wheat yields decrease more rapidly than barley under later planting. Spring wheat shows 40% yield increase to frost seeding, barley only 10%. In 2007, the goal will be to plant more sites at an earlier date.

Contact your Soil & Crop Association if you would like to participate in this project in 2007.

Table 1 - Comparison of Yield & Economics of Spring Wheat vs Barley

Location	Planting Date	Wheat Yield bu/ac	Barley Yield bu/ac	Wheat Income $/ac	Wheat Return $/ac	Barley Income $/ac	Barley Return $/ac
Durham	5-May	40	62	196	$24	162	$22
Arthur 1	27-Apr	70	95	343	$164	248	$103
Arthur 2	2-May	51	86	250	$75	224	$80
Grand Valley	3-May	60	87	294	$117	227	$83
Grand Valley 2	3-May	37	65	181	$9	170	$29
Listowel	4-May	50	97	245	$70	253	$108
Arthur 3	26-Apr	49	62	240	$66	161	$22
Stayner	5-May	38	79	186	$0	206	$63
Elmira	3-May	50	65	245	$70	170	$29
Average Net Return					$66		$60

Horse Hay As A Cash Crop?

by Joel Bagg, Forage Specialist, OMAFRA, Lindsay

The rural landscape in Ontario is changing, and we are seeing more and more horse farms. There are about 300,000 horses in Ontario, and the numbers are increasing. These horses consume approximately 750,000 tonnes of hay every year. The U.S. has over 9 million horses, and many of these are located within trucking distance from Ontario. For hay producers, there is a huge potential market, but special skills are required.

Listen To Your Customer

The first rule of successful marketing is to "identify the product your customer wants to buy, and then produce that product". In order to be successful in the hay business, both hay production and marketing skills are required. Knowing your buyer and what she wants in terms of quality is a crucial component in carving out a niche in this market. Do your market research first, before you make the hay.

Freedom From Rain-Damage, Mould & Dust

The criteria for "quality hay" are quite different for horses than they are for cattle. Forage quality for dairy producers means a high percentage of alfalfa, and early cutting to ensure high protein and digestible energy. By contrast, for horse owners, "quality hay" most importantly means dust-free and mould-free. Mouldy hay is the result of rain damage, baling at moistures that are too high, slow drying in the windrow during high humidity, or improper storage. Horses are very susceptible to mould spores and suffer irritation of the respiratory tract. This can result in "heaves", a chronic cough and "wheezing" that is very damaging.

Match The Type Of Hay With The Horse

Matching the nutrient content of hay with the requirements of the horse is important. There are many different types and uses of horses with different levels of nutrient requirements. Relative to dairy cows, horses do not have high crude protein (CP) requirements. Some horse types, such as idle and lightly used mature horses, may have CP requirements of less than 10%. Nursing broodmares, high performance horses, and growing horses require higher digestible energy and protein diets, and therefore higher nutrient content hay. However, a large proportion of horses in the countryside, including the many idle or lightly used recreational horses, do not require high energy or even moderately high protein diets.

For a large proportion of the horse hay market, early cutting to increase protein and digestible energy is not as important, or even necessarily desirable. A mature horse used for the occasional trail ride is at risk of being too fat if fed high digestible energy hay. Hay that has no mould or dust is more important to maintaining the health of this horse. Grass or grass-alfalfa mixtures are often more suitable. The preferred mixture is typically alfalfa and timothy.

Green, Soft & Weed-Free

Colour does not provide any direct information on the nutritional content of hay, but a poor colour can be an indicator of problems during harvest and storage. A rich green colour indicates that the hay was not rained-on, dried quickly (indicating higher sugar content), and did not heat or mould during storage. Poor odours can also indicate mould. Weeds and trash, such as old stubble, will reduce the value of horse hay. Weeds can be present in pasture and hay that are highly poisonous to horses. Soft hay is more palatable to horses. Unlike cattle, horses use their mouth and lips to manipulate hay and pasture plants when eating. They easily sort feed and eat leaves while leaving the coarse stems.

The Package – Bale Type & Size

While there are some opportunities to market large square and round bales to horse owners, small square bales provide the greatest opportunity to meet the premium price horse hay market. This means manual labour or investment in automated small bale handling equipment. Small square bales are usually handled many times, so they need to be firm, "square shouldered" and hold their shape. A consistent bale size is important to fit trucking requirements. Small square bales should be stored on their edge. Similar to the hoops of a barrel, the twine helps the bales maintain their shape and prevents flattening. This adds to a bale's ability to "breathe" and dissipate moisture.

There is some demand from horse owners for large bales, based on their lower cost. Large bales are a convenient way to feed large groups of horses outside, but many horse farms do not have a loader tractor to handle them. Large square

bales can be "flaked" and are therefore also easier than large round bales to feed to stalled horses inside. Because they are more dense and need to be drier at baling, large square bales can be more challenging to make without mould and dust.

Marketing Skills

"Marketing" is not producing a product and then selling it for whatever price can be had. Marketing involves identifying a product that costumers want to buy and then producing the product. Talk to potential customers to identify market opportunities. What kind of hay do they want, and in what kind of package? Are you targeting local or export markets? How will you ensure you get paid? Gain market share by selling a quality product, rather than selling at a lower price. Work closely with a reputable hay dealer, or develop your own markets by networking, advertising and personal contact.

Hay is sold on the basis of reputation. For repeat business, be sure to consistently meet the buyer's expectations on the type and quality of hay. Taking care of existing customer loyalties is easier than trying to find new customers. Be sure to have adequate liability insurance. Hay producers targeting the horse market usually have alternate markets for hay that does not meet the quality criteria because of rain-damage or mould. This is often sold into the beef cow market for a much lower price.

Horse Hay As A "Cash Crop"

Successful horse hay producers and marketers pay attention to small details. Using newer hay harvest technology, such as new design conditioners, rotary rakes, windrow invertors, preservatives, and bale accumulators, can reduce drying time and labour. Hay crops have high removal rates of phosphorus potash, so fertility is important.

There are opportunities to "add value" to hay crops by producing specific hay products, and by providing customer service such as trucking. Farmers that view horse hay as a surplus market and do not produce the product specifically for horse hay are often disappointed and miss out on the potential premium prices necessary to make a profit. Refer to "Making & Marketing Horse Hay" and other articles on the OMAFRA Forage Website at www.omafra.gov.on.ca/english/crops/field/forages.html.

Is the Emerging Bioeconomy Part of Your Future?

by Ian McDonald, Applied Research Coordinator, OMAFRA, Guelph

I had the opportunity to attend the BIOCAP conference held recently in Ottawa. Although you may not be familiar with BIOCAP, this organization has been actively pursuing the bioeconomy since 2002. BIOCAP (Biological Capital) is composed of many individuals and organizations from agriculture, industry, government and academia. They have collectively been able to allocate $5.7 million, which has leveraged over $20 million for research. The goals of BIOCAP are to promote a national research effort to focus on the development of a sustainable biosphere system to manage greenhouse gases and provide "Green" sources of energy, chemicals and materials. They are helping to advise governments through science on ways to "Capture Canada's Green Advantage".

Positioning Canada

"So what", you say! "Why do I care?" Well, it's an excellent question, but I think the answers will evolve over the next couple of years. Things are changing rapidly. The potential "fruits" of this bioeconomy are starting to show signs of the immense potential available to Canada. Here are some incredible figures. Canada is home to 7% of the global land base, along with 10% of the forests and 15% of the world's fresh water. We are beyond rich by any stretch of the imagination. Coupled with this, we have an agricultural and forestry infrastructure that is in place, productive and efficient. These sectors are in an export position, which suggests that diversion to domestic uses would be non-disruptive, if shifts were to occur.

We are encouraged with the potential to reduce smog, cut reliance on foreign oil, benefit rural communities and increase the overall economy for Canadians. At the same time, we must be concerned with potentially negative impacts, such as over exploitation of natural resources, decimation of forests, and reductions in the sustainability of forest and farmlands, as well as reductions in water quality and quantity. So the path forward is a balancing act.

Producing & Processing Biomass

The bioeconomy is focused on the conversion of biomass from crops, forests and organisms to industrialized fuels or hard products (plastics, chemicals, etc). Its goal is to sustainably maximize biomass production and then efficiently convert the potential energy stored in biomass to energy or products we can utilize. Harvesting biomass is not new. Until about 200 years ago, biomass capture was how energy demand was met. Thirty percent of cultivated farmland was devoted to the "fuel" to run the engines of agriculture (horses and oxen), supply heat, and provide shelter, clothing and tools.

Our role in agriculture will be to sustainably produce, store and process biomass into other products. Biomass production is all about efficiently and sustainably maximizing the harvest of the sun's radiant energy. The production of traditional crops (corn, soybeans and cereals), and new crops (switchgrass, micanthus, reed canary grass, willow and many others), will provide the precursors for fuel, chemicals and other materials. How our agricultural infrastructure will need to change will depend on the sectors of the bioeconomy that individuals aim for.

Rural Community Development

There is great encouragement within all levels of government that the bioeconomy can be an important part of rural community development. In Europe, where anaerobic digestions systems are rapidly evolving to supply electricity and biogas to the greater economy, farmers have seen increases in revenues and profits. Non-farm employment has developed in rural areas to service the new bioeconomy on the farms. Taxes and population have increased, which has stabilized and improved rural towns and villages.

Benefits To Primary Producers

For producers to benefit from the bioeconomy they will need the ability to capture more of the "added-value" from their production of biomass. On the food, feed and fibre side of the last century, we have been very much price takers. There is a great deal of added-value applied to grains, livestock and other products leaving the farm, but others are capturing much of that value. We must ensure that primary producers capture more of the added-value in the bioeconomy. This will mean being involved in the direct sale of the end product to the consumer. This might include the generation and sale of electricity to the grid. Raw materials might be preprocessed on the farm or in the rural areas to more value added materials such as the extraction of resins or starches as precursors of plastics.

Optimistic But Challenging

I have not provided many details about how the bioeconomy might develop. My goal is to give you an overview of where things might be going. I challenge you to think about this and seek out more information. In future newsletters I will discuss more specific areas. Despite how difficult things have been in primary agriculture lately, I am cautiously optimistic that there are great potentials within reach. However, I'm also realistic in that we have a great deal of work ahead of us to capture the potential value. I am encouraged by the interest of the various BIOCAP partners, including leading global corporations, governments, technological industries and producers, in the future opportunities for the agricultural sector.

For more information on BIOCAP and the emerging bioeconomy, check out www.biocap.ca.

Corn Ear Moulds and Mycotoxins: Update

by Greg Stewart and Albert Tenuta, OMAFRA

OMAFRA, in conjunction with Dr. Art Schaffsma, (University of Guelph – Ridgetown Campus) continue to survey corn fields across the province. 20 corn cobs were selected from these fields and assessed for the visual mould present on each ear and tested for vomitoxin (DON) production.

Of the 94 fields tested over the past several weeks, 61 or about 65% of the fields were at or below 2 ppm DON, 17 the fields (18%) were in the 2 to 6 ppm range, while the remaining 18 fields (19 %) were over 6 ppm (see Table 1).

However, if you look exclusively at the fields sampled in the extreme southwest portion of the province (Chatham-Kent, Middlesex and Elgin counties) 13 of the 34 fields examined had DON levels over 6 ppm.

Table 1. Corn ear mould survey, samples taken October 16-25, 2006.
20 representative corn ears taken from each field, scored for visual mould, shelled and tested for vomitoxin (DON).

Area/Counties	Fields with Test Completed	Fields with less than 2 PPM DON		Fields with 2 to 6 PPM DON		Fields with more than 6 PPM DON	
		# of fields	average DON (PPM)	# of fields	average DON (PPM)	# of fields	average DON (PPM)
Area 1 (Prescott and Russell Stormont, Dundas and Glengarry, Lanark, City of Ottawa)	**21**	**20**	**0.2**	**0**		**1**	**10.1**
Area 2 (Northumberland, Durham)	**5**	**4**	**0.2**	**1**	**3.4**	**0**	
Area 3 (Wellington, Halton Hamilton, Brant)	**12**	**8**	**0.5**	**4**	**3**	**0**	
Area 4 (Bruce, Huron)	**9**	**6**	**0.7**	**3**	**3.1**	**0**	
Area 5 (Oxford, Perth)	**13**	**9**	**0.7**	**2**	**2.7**	**2**	**7.5**
Area 6 (Elgin, Chatham-Kent, Middlesex)	**34**	**14**	**0.7**	**7**	**4.8**	**13**	**11.2**
Totals	**94**	**61**	**0.5**	**17**	**3.4**	**16**	**9.6**

The results tend to indicate that there is a significant percentage of the provinces corn that is relatively free of vomitoxin. However, in nearly all parts of the province there are fields that could have high levels of DON and that the chance of this occurring increases significantly in the south-west portions of the province.

Corn with DON levels in the 2-6 ppm may be utilized effectively but will take some additional management (blending, cleaning, combine adjustment, etc). Fields with more than 6 ppm DON will most likely need to be directed away from feeding uses, especially hogs.